



HEPiX IPv6 Working Group

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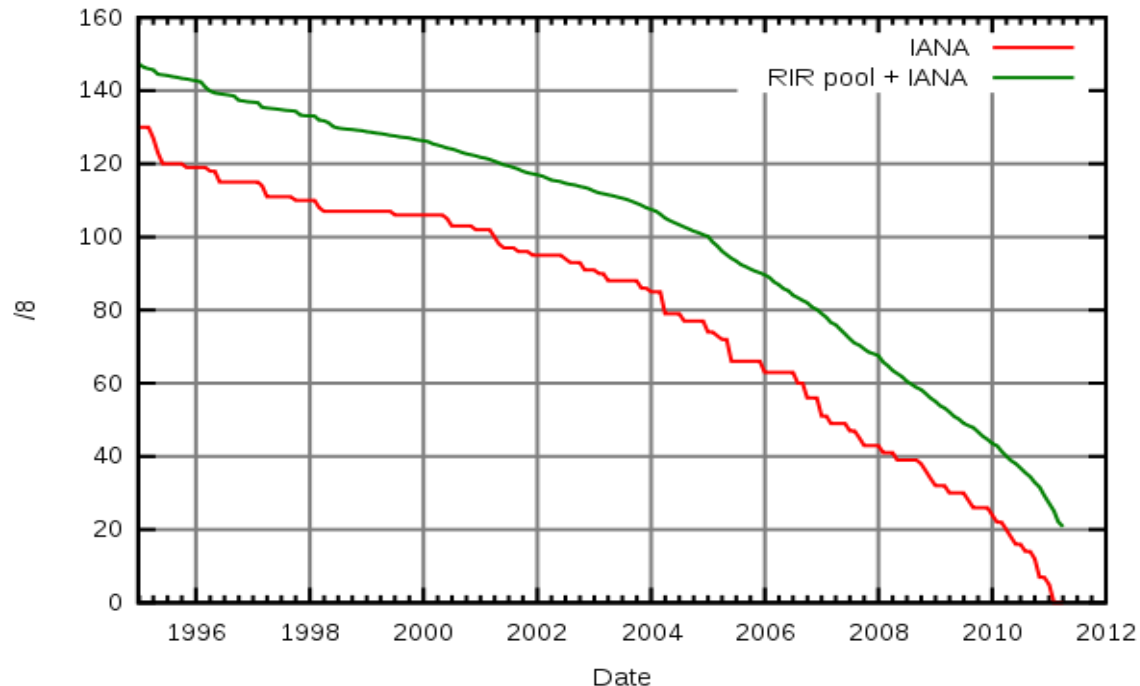
Outline

- IPv4 address status
- The HEPiX IPv6 working group
- Meetings and Admin
- IPv6 testbed
- EGEE, EGI and IPv6
- US DOE and IPv6
- Survey of HEP readiness
- Plans for 2012



IPv4 Free Addresses (/8 blocks)

Free /8



<http://en.wikipedia.org/wiki/File:Ipv4-exhaust.svg>



IPv4 Addresses

- From Geoff Huston (<http://ipv4.potaroo.net>)
- IANA Unallocated Address Pool (Global)
Exhaustion happened: **03-Feb-2011**
- Projected RIR Address Pool Exhaustion Dates:
 - APNIC: **19-Apr-2011** (Asia Pacific - happened)
 - RIPENCC: **24-Jun-2012** (Europe)
 - ARIN: **5-Jun-2013** (North America)
 - LACNIC: **28-Feb-2014** (South America)
 - AFRINIC: **29-Jun-2014** (Africa)



HEPiX IPv6 WG

Created in April 2011 with aims:

- Phase 1 to consider whether and how IPv6 should be deployed in HEP
 - especially for WLCG
- Readiness and Gap analysis
- HEP applications, Middleware, Security issues, System management and monitoring tools, End to end network monitoring tools
- Run a distributed HEP testbed
 - to help explore all the above issues
- Initial report at end of 2011



IPv6 WG mandate (2)

- If we agree there is a Phase 2
 - deployment phase
- Propose a timetable
 - and analyse resources required
- Implementation plan and configuration advice will be required (e.g. advice on end system and firewall configuration - during transition period)



WG membership

- Currently active:
 - CERN, DESY, EPFL, FNAL, FZU, GARR, Glasgow, INFN, KIT, Manchester, RAL, SARA, SWITCH, Umea, USLHCNet (Caltech)
 - CMS (other experiments to come)
- Nearly 50 on the mail list



HEPiX IPv6 WG Meetings

- <http://indico.cern.ch/categoryDisplay.py?categId=3538>
- Two face to face meetings (June and Sep)
- Five video meetings
- Next face to face meeting
 - 5/6 December 2011 at CERN



Working Group admin

- Mail list
 - ipv6 AT hepix DOT org
- Wiki
 - <https://w3.hepix.org/ipv6-bis/>
- For IPv6 WLCG testing we have created a new Virtual Organisation
 - ipv6.hepix.org
 - VOMS services provided by INFN



IPv6 testbed

- <https://w3.hepik.org/ipv6-bis/doku.php?id=ipv6:testbed>
- Sites already connected
 - INFN (Milan), CERN, DESY, KIT, USLHCNet
- Other sites coming
 - EPFL, GARR, Glasgow, Manchester, SARA, RAL, Umea
- At least one dual stack test node on public IPv4 and IPv6 networks at each site
 - Running SL5 (with valid X.509 host cert)
- IPv4 name, IPv6 name and common name
- Standard connectivity tests (ping6 etc.)
 - Script on wiki to validate the existence and config



IPv6 testbed (2)

- Test nodes are deployed
 - Now configuring some basic Grid services
- Will start Grid data transfer tests soon
 - In November will do simple GridFTP tests
- In December will work with CMS
 - Simple stress tests of point to point transfer
 - Then FTS and PhEDEx
- Workload management to follow



EGEE and IPv6

- During EGEE-II and EGEE-III (SA2)
- Source code checker
 - A bash script looking for non compliant function calls and address data structures
- Dynamic Code Checker (IPV6 CARE tool)
 - A tool based on the LD_PRELOAD mechanism to intercept calls to non compliant functions in the dynamically linked libraries
- Analysis of all gLite code was performed
 - And code was modified to fix problems
- <https://twiki.cern.ch/twiki/bin/view/EGEE/IPv6FollowUp>



EGI and IPv6

- <https://wiki.egi.eu/wiki/IPv6>
- an on-going IPv6 survey of NGIs will be finalized and wrapped up soon
- EGI operations (SA1) and EGI tools for operations (JRA1) have started IPv6 related activities.
- IPv6 readiness of the tools is at https://wiki.egi.eu/wiki/EGI-JRA1_IPv6_Readiness
- Ongoing collaboration with HEPiX WG



US DOE and IPv6

- External/public-facing servers & services to support native IPv6 by end of FY2012 (30 Sep)
- Internal client systems that access external public Internet servers must support native IPv6 by end of FY2014
- Not scientific computing
- DOE IPv6 Task Force/ESnet Site Coords



Gap Analysis 2011

- What is in scope?
 - All WLCG services run on Tier 0/1/2
 - Assume dual stack services
 - Not clients (assume they can continue IPv4)
 - The most common management and monitoring tools
 - The most common batch systems, storage systems, etc.
- What does IPv6-ready mean?
 - Works when contacted by a IPv6-only device



Survey of IPv6 readiness

- Will start this soon
- HEP applications, middleware and tools
- Draft schema for the survey
 - <https://w3.hepix.org/ipv6-bis/doku.php?id=ipv6:survey>
- Comments on the schema are welcome
 - What questions have we forgotten?



Plans for 2012

- Continue readiness analysis
 - Including dynamic testing?
 - Work with EGI/EMI on middleware
 - More on tools
- IPv6 Security
- Testbed
 - On migration it is essential that functionality and performance are as for V4
 - Will need to expand to allow full-scale functionality and stress testing
- HEP IPv6 Day(s)?



Summary

- Work is now well underway
- Initial report by end of 2011
- There will be much work in 2012
- Volunteers always welcome!
 - Send email to me